Reviewer’s report

Title: Burden and Risk Factors of Invasive Group B Streptococcus Disease among Neonates in a Chinese Maternity Hospital

Version: 1 Date: 21 Feb 2018

Reviewer: Ian Gassiep

Reviewer's report:

Reviewer comments:

This is an interesting and well conceived study with relevant results. While I believe this research does add useful information to the medical literature, especially in China, this manuscript requires extensive revision.

General:

There are many grammatical and punctuation errors throughout the manuscript.

There are many inconsistencies with reporting of data in numbers and or words, as well as including and excluding total numbers and percentages.

The results section was cumbersome and difficult to read.

I agree with the authors comments that they methods of GBS detection at their facility are not sensitive given the samples taken and lack of enrichment. This may have led to a significant false-negative rate, and thus true incidence and outcome data may be skewed currently.

Timing of antibiotics is pertinent and not included.

Susceptibility data was collected but not reported.

There are a number of statements that require clarification and or rewording as detailed below.
Abstract:

Line 32: "A retrospective matched case-control study was conducted in a tertiary maternity and child hospital." Consider changing "child" to "paediatric".

Line 33: "…invasive GBS infection and death were…” consider changing "death" to "mortality".

Line 37: "incidences", could be "incidence".

Line 37: first use of abbreviations EOD & LOD, please expand on first use.

Line 39: "Overall, pneumonia and sepsis constituted 63.1% and 88.9% of cases of EOD and LOD, respectively." This sentence is unclear. Are the authors combining the clinical presentations/diagnoses of pneumonia & sepsis? As in pneumonia & sepsis is 63.1% or pneumonia is 63.1% & sepsis in 88.9%? I assume it is the former.

Line 41/41: "Predictors of mortality were sepsis and false negative screening." Include relevant statistics please.

Keywords:

Line 50: I am uncertain that "burden" is a sufficiently targeted keyword. Could also consider "neonatal sepsis" as opposed to "neonates", and "GBS risk factors".

Methods:

Line 67: "Gynaecology and Obstetrics and Paediatrics." Consider amending to Gynaecology, Obstetrics and Paediatrics."

Line 69: First use of abbreviation IAP, please explain.

Line 69 - 74: I would suggest including a reference as to why the specific risk factors were chosen.
Line 75: "…GBS disease incidence (mortality) between native…" does mortality in parentheses mean that both incidence & mortality are higher in migrant workers? Is this based on previous evidence or a finding of this particular study? If based on prior literature, please reference. If found in this study then should be in the results section.

Study design:

Line 84: please reference definitions of EOD & LOD.

Line 88: "and the two groups were matched on birth date." This is unclear as in the previous sentence it is stated "infants who were born within the same period."

Microbiological identification and susceptibility testing:

Line 91: "NICU (neonatal intensive care unit)"; should be neonatal intensive care unit (NICU). The same for CSF.

Line 94: "3D microbial system", I believe this should read "BacT/ALERT 3D Microbial Identification System."

Line 95: "Positive blood culture bottles were subsequently plated onto Columbia blood agar…"

The bottle itself was not plated. Would suggest rephrasing.

Also, from where was the agar sourced (which company)?

Line 96: "35 degrees", inconsistent use of words & symbols.

Line 97: "which were also plated onto Columbia blood culture bottles." Was the CSF inoculated directly onto Columbia media or inoculated into a bottle culture bottle?

Line 100: "GBS-like colony morphologies." Change to "morphology" singular.
Line 100 - 102: "GBS was identified by positive Gram staining and presumptive identification by the CAMP test." Would suggest clarifying gram stain results & CAMP test result.

Data collection:

Line 106 - 122: all this information is mentioned in the table. This is an unnecessary repeat.

Line 112 - 114: This is an unnecessary repeat.

Line 115: "Maternal urinary tract culture was seldom performed." This is more a result than data collection point.

Statistical analysis:

Line 122: "are presented as the mean ± standard deviation (SD) or median." If using the median is an interquartile range used?

Line 122 - 126: "Categorical variables are presented as percentages and evaluated using the chi-square (χ²) test or the two-tailed Fischer's exact test. We used the chi-square(χ²) test or the two-tailed Fischer's exact test to compare demographic and clinical characteristics between cases of EOD and LOD." This appears to be somewhat redundant as some of the demographic & clinical characteristics are categorical variables. Would suggest rephrasing.

Line 127: "Univariate analysis and multivariate analysis." Inconsistency of terminology as in Methods section "univariable" and "multivariable" are used.

Results:

Line 143 - 147: this information is detailed in Fig.1 and could be better summarised.

Line 150: Please clarify if the authors are combining pneumonia & sepsis, as in 63.1% of EOD cases. This could be better worded.

Line 151: "Nineteen (25.7%) cases occurred…" inconsistent use of words and numbers.
Line 153 - 155: suggest writing as two sentences not one. Second sentence "39/74(52.7%) women who received IAP." No need to list all antibiotics listed in table.

Line 156: "Antibiotic dose and exposure duration before delivery differed." Suggest add in reference to Table 1.

Line 157: "26 women who underwent caesarean delivery and whose infant developed EOD, 25…" include percentages with raw numbers.

Line 162: "though the results were poor", would suggest reword and clarify.

Line 168: "LOD was 23 minutes (5 minutes - 6 days) and 17 days (7 - 51 days), respectively." Add statistical analysis data.

Line 157 - 183: could be streamlined, as it is currently difficult to read.

Line 189: "hospitalization among fatal cases was 4.83 days, which was less than the average…"

Is this from date of admission, and is there a difference between EOD & LOD?

Line 208: "and mothers' status as a native or migrant worker…" unclear which is worse, reword.

Discussion:

Line 221: "Over the past decades, GBS has been recognized as a main cause of neonatal…" would suggest a second reference more recent than 1973 to better clarify this statement.

Line 233: "Our study confirms that GBS is an important pathogen in fatal neonatal pneumonia…" only fatal neonatal pneumonia or also non-fatal neonatal pneumonia and sepsis without pneumonia?

Line 242: "because infants aged >1 month go to other general hospitals." Is the author's center specifically for neonatal care or also general paediatrics? If general, then it may not be due to the reason given in the text.
Line 243: "antibiotics at home may lead to negative culture results", there is no mention of antibiotic receipt pre-admission, and was this data collected?

Line 245: "The higher incidence of EOD may result from our neonatal doctors thinking highly of diagnostic evaluations." This sentence is unclear. Also, it may not stand to reason, as it would appear that patients with suspected infection were investigated similarly.

Line 246 - 247: "Wortham reported that 13% of early onset infections had no documented symptoms, including 9% who remained asymptomatic at 72 hours." What are the numbers for LOD and did the authors find a difference in their data?

Line 249 - 251: "they received a limited diagnostic evaluation (blood cell count and blood/throat swab culture). This resulted in early detection, early diagnosis and early treatment." These statements seem contradictory; as the authors mention "limited" evaluation, but then mention that this resulted in "early detection".

Line 253 - 254: "and thus the prevalence of low pathogenic bacteria might be another factor", difficult to infer low pathogenic strains. Would suggest considering the combination of host-pathogen interaction. Also no strain data provided.

Line 254 - 256: "Clinically diagnosed meningitis accounted for 3/65 EOD and 2/9 LOD cases, respectively; this lower morbidity may be caused by a strain with low virulence." Firstly, the numbers are low in the LOD cohort. Secondly, was there a clinical outcome difference to suggest a difference in virulence?

Line 256: "CPS type III", first use of abbreviation, please expand.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
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Yes

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